RUSH

HEATH COMPANY • BENTON HARBOR, MICHIGAN

HEATHKIT®
ASSEMBLY MANUAL

STEREO CAR SPEAKER KIT
MODEL CRA-1000-2

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595-1396-01

Dear Customer:

The Heathkit electronic product you have purchased is one of the best performing electronic products in the world.

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Your Heathkit Warranty

During your first 90 days of ownership, any parts which we find are defective, either in materials or workmanship, will be replaced or repaired free of charge. And we'll pay shipping charges to get those parts to you — anywhere in the world.

If we determine a defective part has caused your Heathkit electronic product to need other repair, through no fault of yours, we will service it free — at the factory, at any retail Heathkit Electronic Center, or through any of our authorized overseas distributors.

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What happens after warranty? We won't let you down. If your Heathkit electronic product needs repairs or you need a part, just write or call the factory, your nearest retail Heathkit Electronic Center, or any Heath authorized overseas distributor. We maintain an inventory of replacement parts for each Heathkit model at most locations — even for many models that no longer appear in our current product line-up. Repair service and technical consultation are available through all locations.

We hope you'll never need our repair or replacement services, but it's nice to know you're protected anyway — and that cheerful help is nearby.

Sincerely,

HEATH COMPANY
Benton Harbor, Michigan 49022

Installation Instructions

for the

HEATHKIT

STEREO CAR SPEAKER KIT

MODEL CRA-1000-2

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HEATH COMPANY

BENTON HARBOR, MICHIGAN 49022

INTRODUCTION

The Heathkit Model CRA-1000-2 Stereo Car Speaker Kit consists of two rugged, high fidelity 4-1/2" Speakers especially selected for use with the Heathkit Model CR-1000 FM Tuner, the Heathkit Model CT-1001 Stereo Cassette, and the Heathkit Model CRA-1000-1 Power Amplifier.

The compact construction of these Speakers makes them particularly adaptable to installation in the rear deck or in the doors of your car.

A frequency response range of 60 Hz to 15 kHz plus sound reproduction capabilities of larger speakers provide for stereo sound in your car comparable to many good, home stereo systems.

The Model CRA-1000-2 Stereo Car Speakers will provide exciting stereo listening while you are driving and give you years of dependable service.

Universal speaker mounting plates are supplied in the Kit along with all necessary mounting hardware to mount these speakers on 4" x 6", 5" x 7", or 6" x 9" rear deck openings. These plates may also be used to mount the speakers in the doors.

PARTS LIST

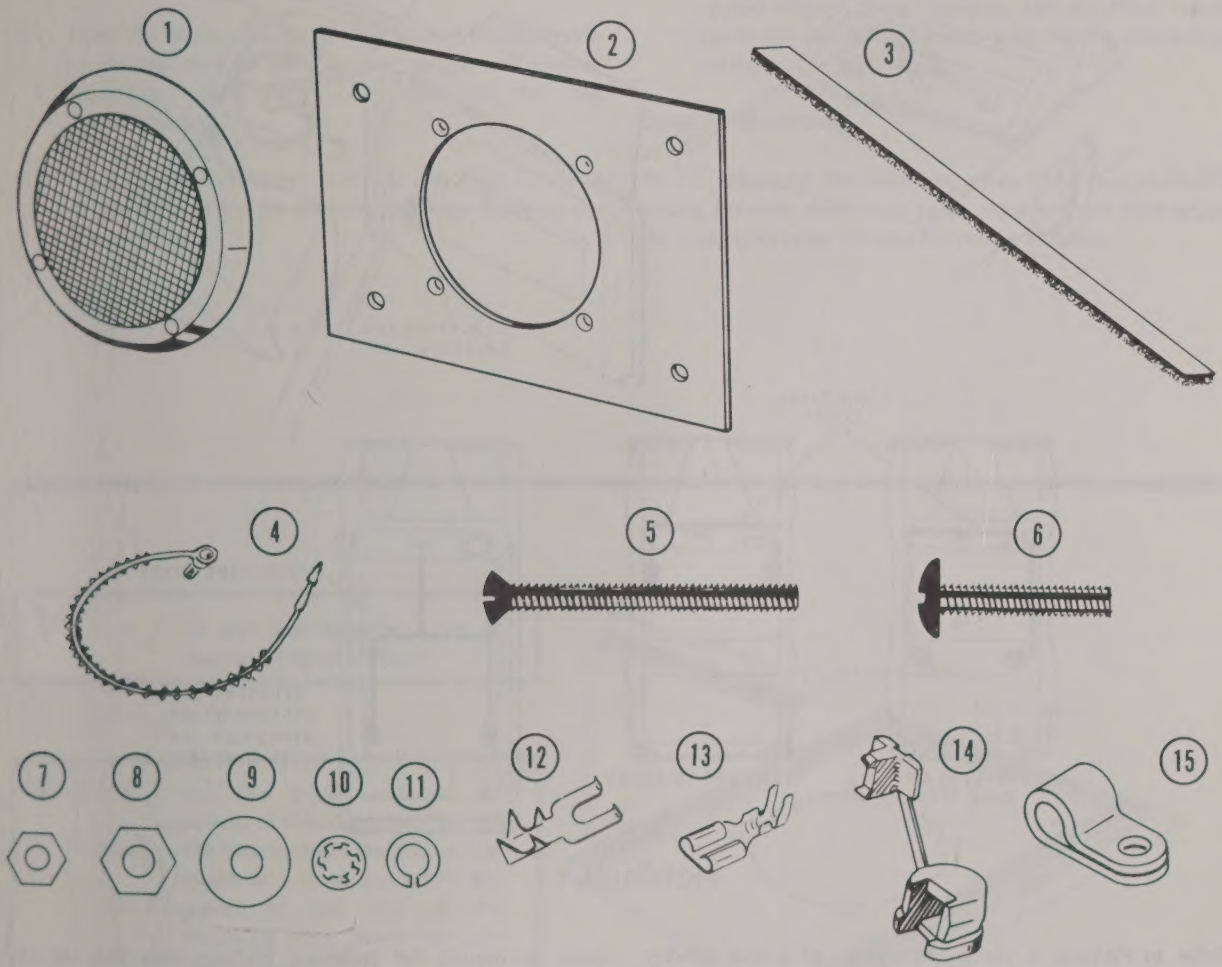
Check each part against the following list. The key numbers correspond to the numbers in the Parts Pictorial.

To order replacement parts, refer to the "Price Each" column and use the Parts Order Form furnished with this kit.

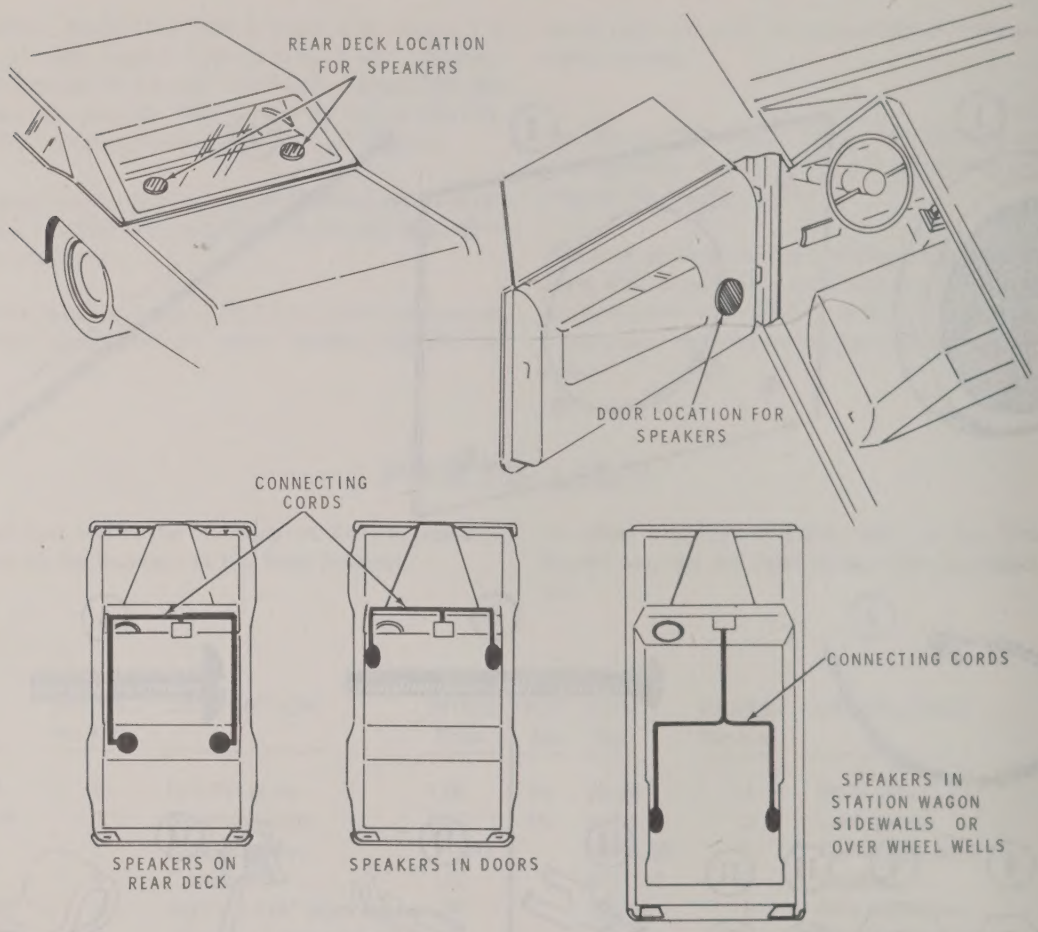
KEY No.	PART No.	PARTS Per Kit	DESCRIPTION	PRICE Each
1	209-69	2	Speaker grille	1.05
2	205-878	2	Mounting plate	1.65
3	73-77	1	Rubber gasket	.10/ft
4	354-6	4	Cable tie	.10
5	250-392	8	8-32 x 1-3/4" black screw	.05
6	250-1119	8	10-32 x 1" black screw	.15
7	252-4	10	8-32 nut	.05
8	252-5	8	10-32 nut	.05
9	253-45	10	#8 flatwasher	.05
10	254-2	10	#8 lockwasher	.05
11	254-38	8	#10 split lockwasher	.05
12	259-22	4	Spade lug	.05
13	432-66	4	Connector	.10
14	75-24	4	Strain relief	.10
15	207-5	2	Cable clamp	.10
	89-43-30	1	Connecting cord	1.35
	401-161	2	Speaker	5.00
	391-34	1	Blue and white identification label	
	597-260	1	Parts Order Form	
		1	Manual (See front cover for part number.)	2.00
			Solder (Additional 3' rolls of solder, #331-6, can be ordered for 15 cents each.)	

The above prices apply only on purchases from the Heath Company where shipment is to a U.S.A. destination. Add 10% (minimum 25 cents) to the price when ordering from a Heathkit Electronic Center to cover local sales tax, postage, and handling. Outside the U.S.A. parts and service are available from your local Heathkit source and will reflect additional transportation, taxes, duties, and rates of exchange.

PARTS PICTORIAL



SPEAKER INSTALLATION


REAR DECK LOCATION FOR SPEAKERS
DOOR LOCATION FOR SPEAKERS
CONNECTING CORDS
SPEAKERS ON REAR DECK
SPEAKERS IN DOORS
CONNECTING CORDS
SPEAKERS IN STATION WAGON SIDEWALLS OR OVER WHEEL WELLS

PICTORIAL 1

Refer to Pictorial 1 for an illustration of typical speaker installations. Then read the following sets of installation instructions ("Rear Deck Installation" on Page 5 and "In-Door Installation" on Page 14) and decide where you want to mount the Speakers. Perform only the set of instructions that pertain to the installation location you have chosen.

REAR DECK INSTALLATION

Initial Considerations

1. Open the trunk of your car and inspect the underside of the rear deck to see if speaker cutouts and speaker mounting holes have been provided by the manufacturer.

2. Look at the upholstery over the rear deck to see if grille openings for the speakers have been made by the manufacturer.

3. Inspect the trunk for wiring from the taillights and look for openings that these wires go through into the car. The connecting cords to your Speakers can also be routed through these openings. Lift the floor carpet inside the car to find a clear path for the connecting cords.

Speaker Mounting

NOTE: Many of the following steps have two check-off spaces. Perform these steps twice, once for each Speaker, in the numbered order on each Pictorial and Detail.

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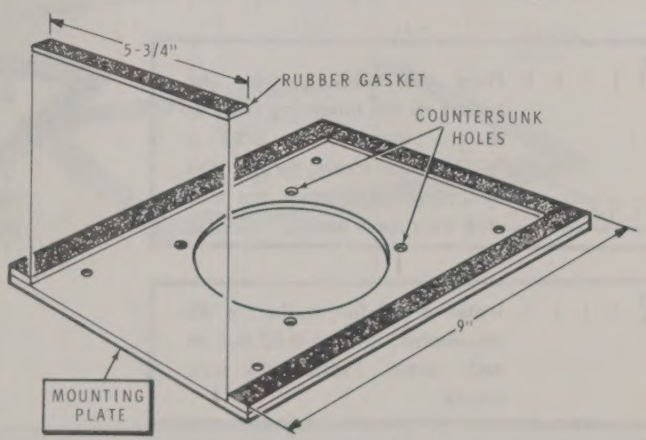
1 ( ) ( ) Be sure the mounting plate is clean and free of oil film.

2 ( ) ( ) Cut two 5-3/4" and two 9" lengths of rubber gasket. Peel off the backing from the gasket, one length at a time, and install the gasket on the side of the mounting plate which has four countersunk holes.

NOTE: If grille openings already exist in the rear deck upholstery of your car, proceed to Pictorial 3 and perform those steps. However, if no grille openings exist, proceed to Pictorials 4, 5, and 6 and perform those steps.



PICTORIAL 2

NOTES:

1. Use this Pictorial if grille openings already exist in the rear deck upholstery.

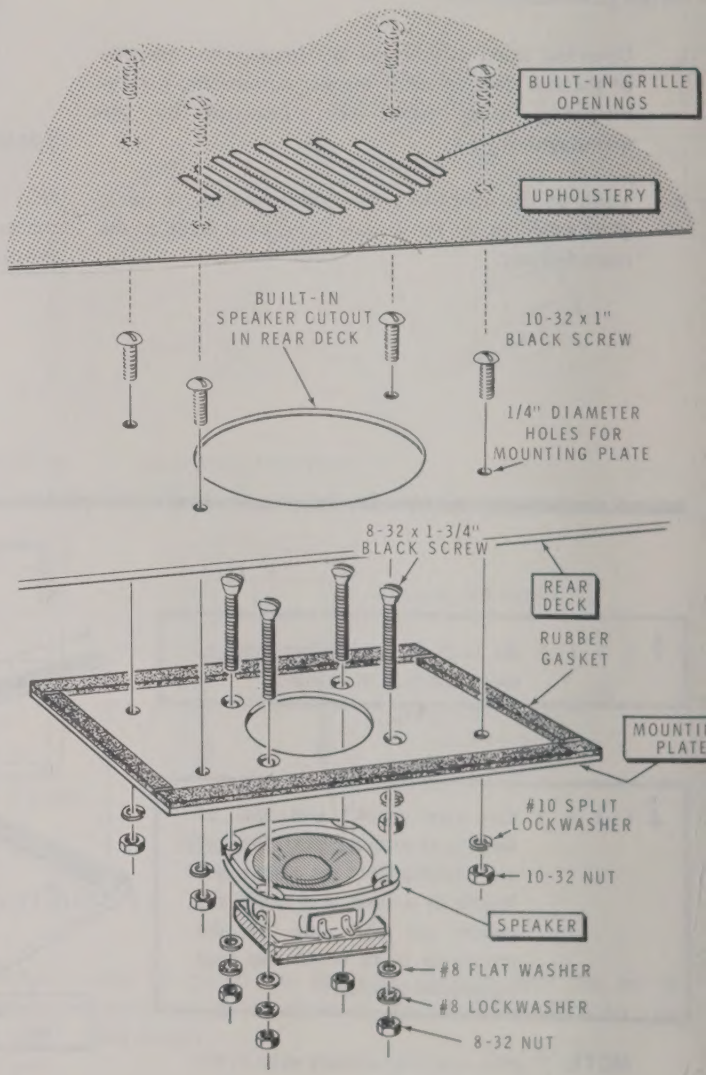
2. It may be necessary to use the mounting plate as a template to mark and drill the four 1/4" diameter holes required to install the mounting plate on the rear deck as shown. If the rear deck upholstery cannot be lifted and bent back to install the four 10-32 x 1" black screws, also drill the four holes through the upholstery. The 10-32 x 1" screws shown in dashed outline will then pass through the upholstery in step 3.

3. When you install the mounting plate, with speaker, be sure to position the plate so the speaker lugs are accessible.

1 ( ) ( ) Place the speaker under the cutout in the mounting plate as shown. Install four 8-32 x 1-3/4" black screws through the mounting plate from the side with the rubber gasket.

2 ( ) ( ) Install a #8 flat washer, a #8 lockwasher, and an 8-32 nut on each screw. Tighten the nuts evenly.

3 ( ) ( ) Locate the mounting plate, with speaker, under the speaker cutout on the rear deck and install four 10-32 x 1" black screws through the rear deck and the mounting plate. Then install a #10 split lockwasher and a 10-32 nut on each screw. Tighten each nut securely.



PICTORIAL 3

PROCEED TO PICTORIAL 7.

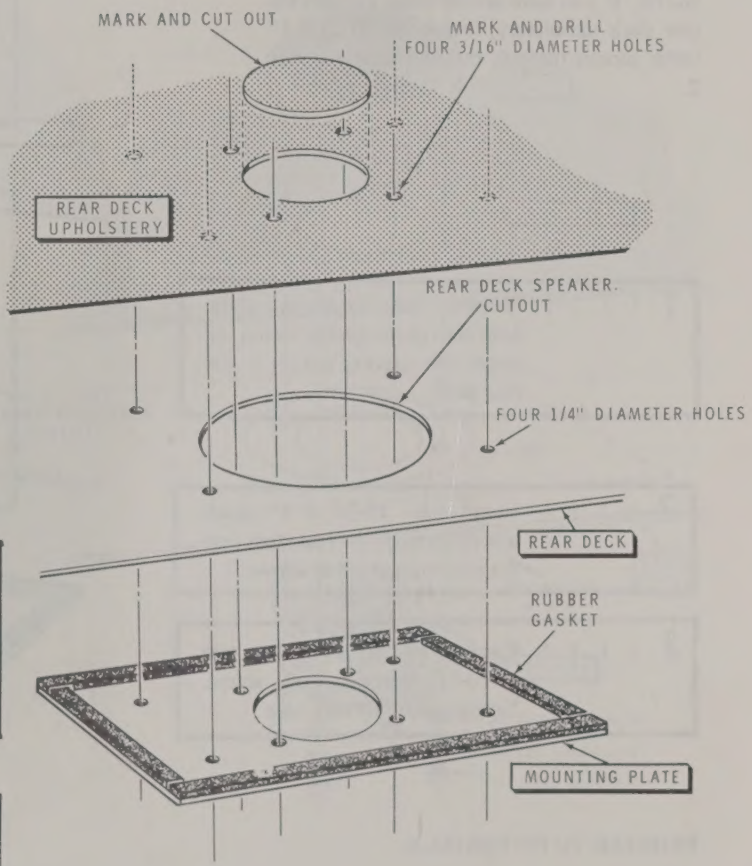
NOTES:

1. Use this Pictorial if there are no grille openings in the rear deck upholstery.

2. It may be necessary to also mark and drill the four 1/4" diameter holes required to install the mounting plate. Drill these holes through the rear deck and the upholstery if the upholstery cannot be lifted and bent back.

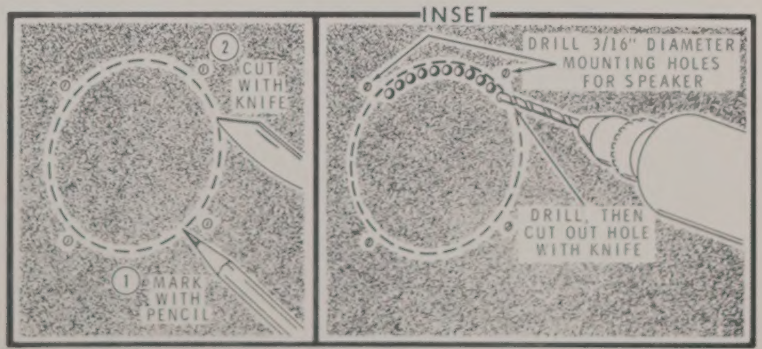
3. If the rear deck upholstery is too heavy to cut with a knife, drill a circle of holes inside the speaker cutout outline and then cut between the holes with a knife. See the inset drawing.

CAUTION: Protect your eyes when you drill the holes. Also, use a piece of metal or wood on top of the rear deck to protect the rear window from the drill bit.



1 ( ) ( ) Use the mounting plate as a template and mark the speaker cutout and the four 3/16" speaker mounting holes on the underside of the rear deck upholstery.

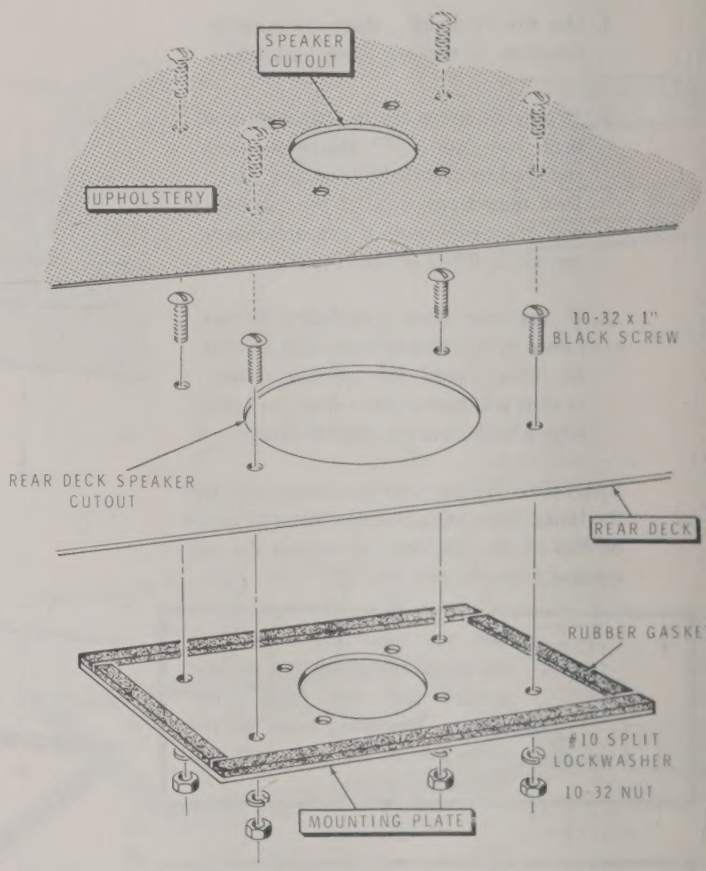
2 ( ) ( ) Carefully drill the four 3/16" diameter speaker mounting holes up through the upholstery. Cut the speaker cutout in the upholstery using a knife.



PROCEED TO PICTORIAL 5.

PICTORIAL 4

NOTE: If you have drilled holes through the rear deck upholstery, install the 10-32 x 1" black screws through the upholstery in step 2.



1 ( ) ( ) Position the mounting plate, with the rubber gasket facing up, under the speaker cutout in the rear deck.

2 ( ) ( ) Install four 10-32 x 1" black screws through the rear deck and the mounting plate as shown.

3 ( ) ( ) Place a #10 split lockwasher and a 10-32 nut on each screw. Tighten each nut securely.

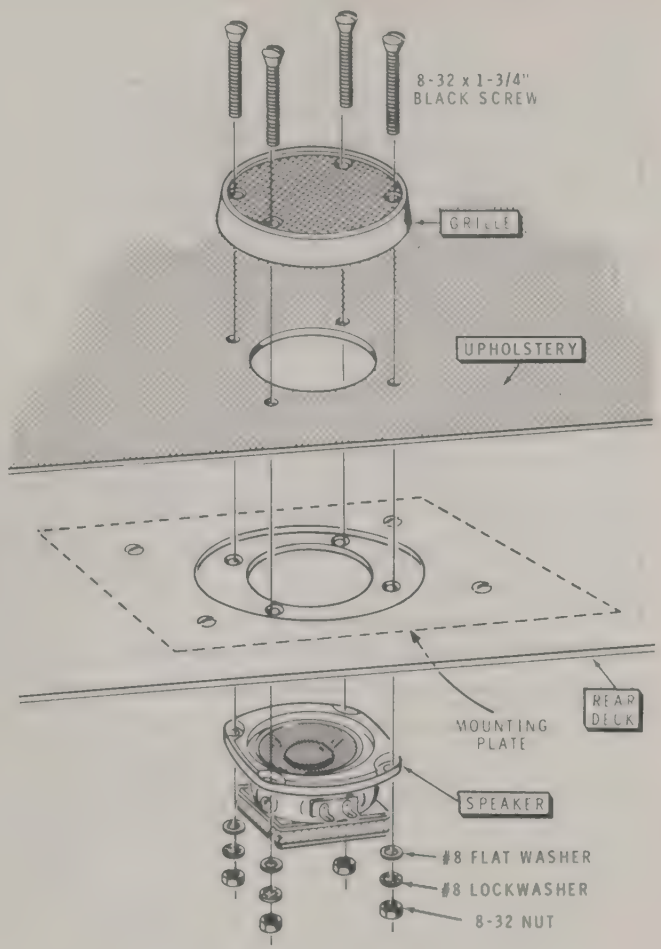
PROCEED TO PICTORIAL 6.

PICTORIAL 5

1 ( ) ( ) Locate a grille over the speaker cutout in the upholstery and install four 8-32 x 1-3/4" black screws through the grille, the upholstery, and the rear deck.

2 ( ) ( ) Position the speaker so the speaker lugs are accessible. Then place the speaker on the four 8-32 x 1-3/4" screws and install a #8 flat washer, a #8 lockwasher, and an 8-32 nut on each screw. Tighten the nuts evenly. Do not overtighten the nuts or the speaker grille may be damaged.

PROCEED TO PICTORIAL 7.



PICTORIAL 6

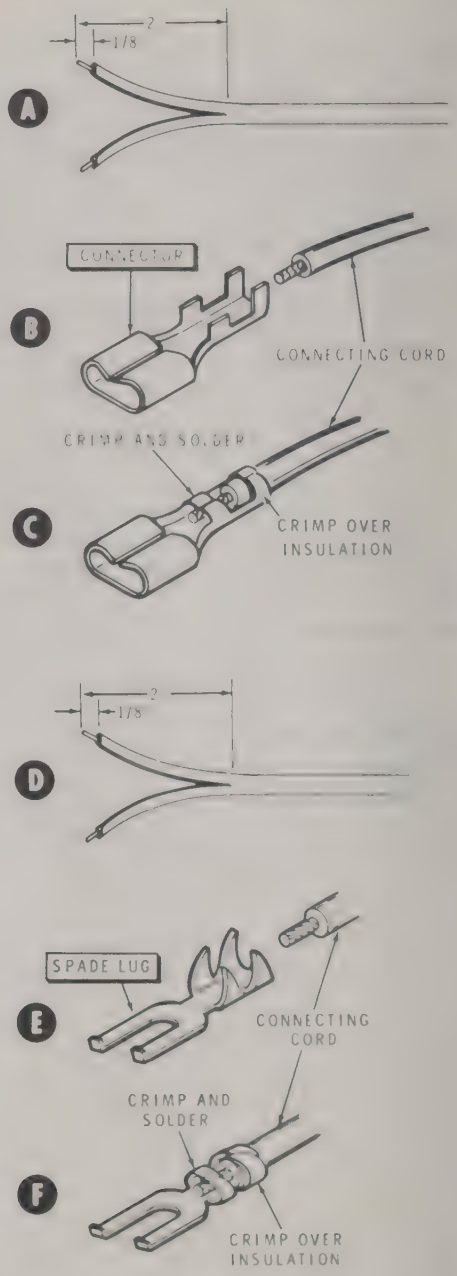
1 ( ) Cut the connecting cord into two equal lengths that are adequate for your proposed routing.

2 ( ) ( ) Prepare one end of a cord as shown in Part A.

3 ( ) ( ) Install a connector on each lead at this end of the cord as shown in Part B and Part C.

4 ( ) ( ) Prepare the other end of the cord as shown in Part D.

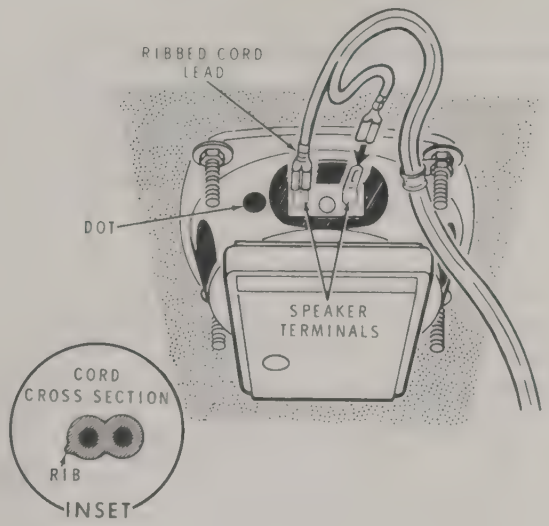
5 ( ) ( ) Install a spade lug on each cord lead as shown in Part E and Part F.



PICTORIAL 7

1 ( ) ( ) Connect the speaker cord connectors to the speaker terminals. Be sure the ribbed cord lead is connected to the terminal identified by the dot. Refer to the inset drawing to identify the ribbed cord lead.

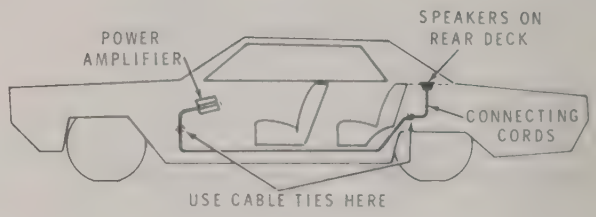
2 ( ) ( ) Position the connecting cord through a cable clamp and secure the clamp to a speaker mounting screw with a #8 flat washer, #8 lockwasher, and an 8-32 nut.



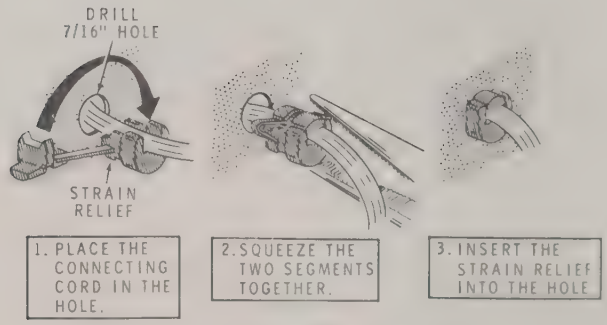
PICTORIAL 8

1 ( ) ( ) Route the connecting cord from the Speaker, through the car, to the power amplifier as shown. Use the cable ties to tie the cord to a convenient support.

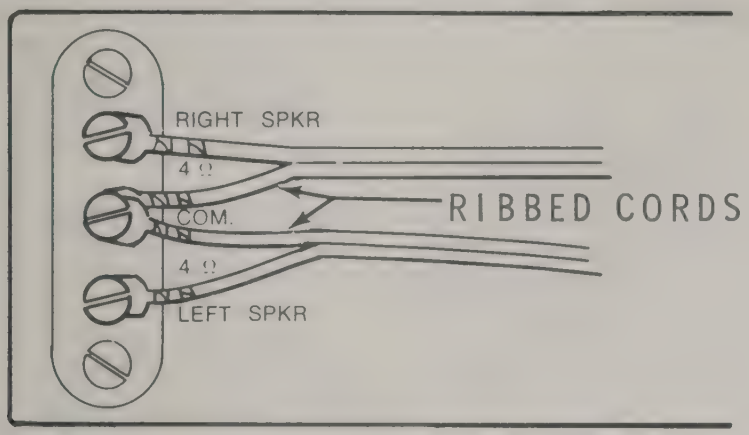
NOTE: If 7/16" diameter holes are drilled in the car body to route the cord, install strain reliefs in the holes as shown in Detail 9A.



PICTORIAL 9


DRILL 7/16" HOLE
STRAIN RELIEF
1. PLACE THE CONNECTING CORD IN THE HOLE.
2. SQUEEZE THE TWO SEGMENTS TOGETHER.
3. INSERT THE STRAIN RELIEF INTO THE HOLE

Detail 9A



1 ( ) Connect each ribbed cord lead to the COM terminal of the power amplifier as shown.

2 ( ) Connect the other cord lead from the right speaker to the RIGHT SPKR terminal as shown.

3 ( ) Connect the other cord lead from the left speaker to the LEFT SPKR terminal as shown.

PICTORIAL 10

Checking the Speakers

NOTE: If the Speakers do not operate properly in the following step, proceed to "In Case of Difficulty."

( ) Operate the Stereo Cassette and/or the FM Tuner at various volume levels to check the Speakers, cords, and connections to the power amplifier and Speakers.

( ) Replace the floor carpet and/or carpet trim over the speaker cords in your car.

( ) Again operate the stereo equipment to be sure the Speakers are working normally.

( ) Carefully peel away the backing paper from the blue and white identification label. Then press the label on your Manual cover for an easy reference. Be sure to refer to the numbers on this label in any communications you have with the Heath Company about this kit.

This completes the "Speaker Installation" on the rear deck of your car.

In Case of Difficulty

1. Check the connectors on the Speakers and the power amplifier. Be sure the speaker connectors are attached securely to the speaker lugs and that the power amplifier screws are tightened on the spade lugs.

2. Check for a broken cord lead at the ends of the connector cords. Also, check the solder connections at all the connectors.

3. Check for a "short" between the speaker lugs, or between the cords and any metal part of the car. Also, check for a "short" between the two leads of a connecting cord at the Speakers or at the amplifier.

IN-DOOR INSTALLATION

Initial Considerations

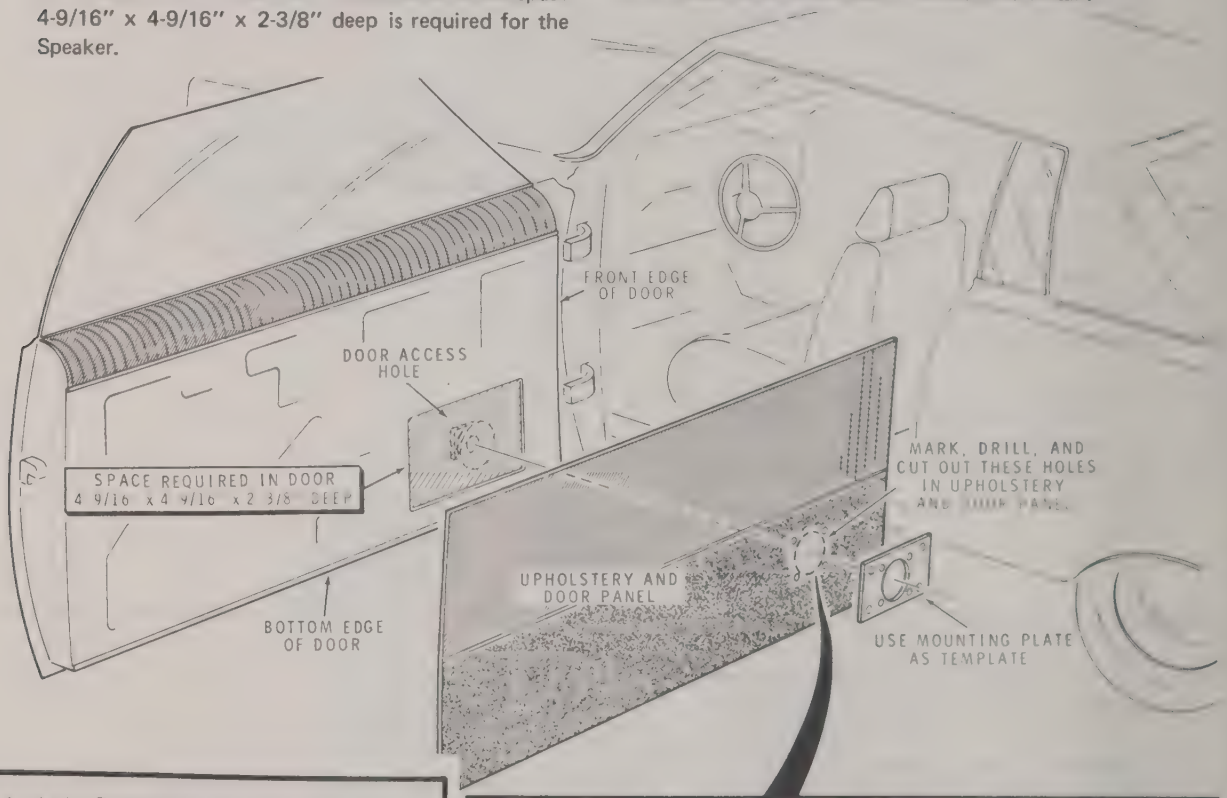
NOTE: Remove the door handles for the next steps.

1. Loosen and partially remove the door upholstery and panel to visually inspect the inside of the door. The Speaker can be located in an access opening in the door, as shown in Pictorial 11. An unobstructed space 4-9/16" x 4-9/16" x 2-3/8" deep is required for the Speaker.

2. Be sure the Speaker in the door will not interfere with the internal parts of the door when the windows are lowered. Also, be sure that the speaker grille will not prevent using any of the door handles.

Speaker Mounting

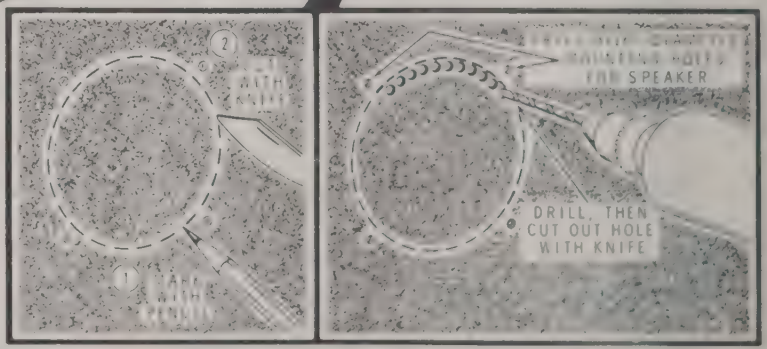
NOTE: Many of the following steps have two check-off spaces. Perform these steps twice, once for each Speaker, in the numbered order on each Pictorial and Detail.


FRONT EDGE OF DOOR
DOOR ACCESS HOLE
SPACE REQUIRED IN DOOR
4 9/16 x 4 9/16 x 2 3/8 DEEP
BOTTOM EDGE OF DOOR
UPHOLSTERY AND DOOR PANEL
MARK, DRILL, AND CUT OUT THESE HOLES IN UPHOLSTERY
USE MOUNTING PLATE AS TEMPLATE

1 ( ) ( ) Remove the door upholstery and door panel from the door.

2 ( ) ( ) Measure the distance from the front edge of the door to the center of the access hole that the Speaker will be located in. Transfer this measurement to the door panel. Also, transfer the distance from the bottom edge of the door to the center of the access hole.

3 ( ) ( ) Use the mounting plate as a template to mark the speaker cutout and the 3/16" diameter speaker mounting holes on the door panel.



4 ( ) ( ) Cut the speaker cutout in the door panel or use a drill as shown, to drill holes inside the outline of the cutout and then cut the material from the panel. Then drill the four 3/16" diameter speaker mounting holes.

PICTORIAL 11

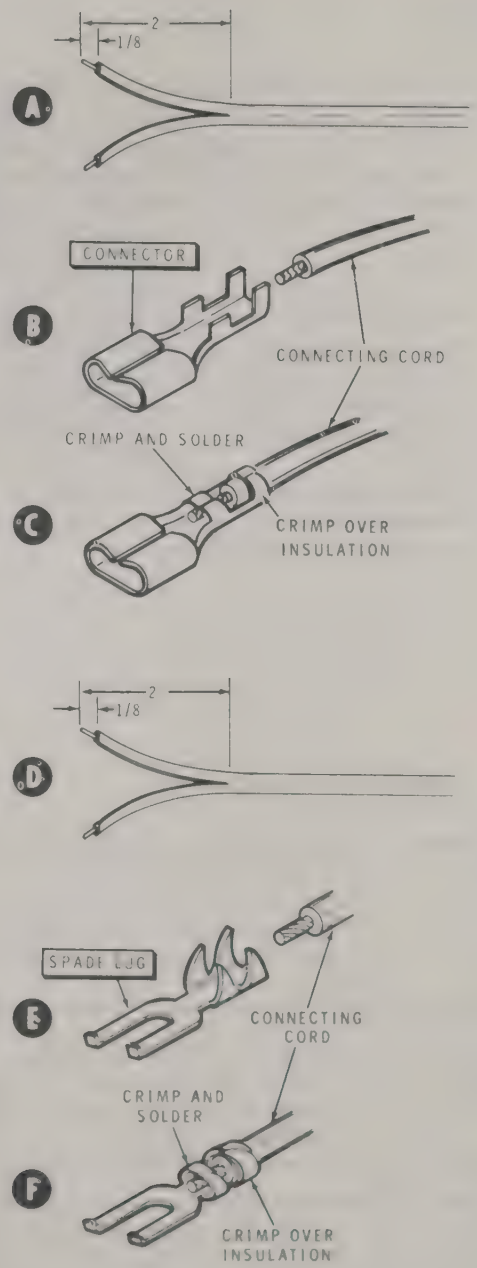
1 ( ) Cut the connecting cord into two equal lengths, that are adequate for your proposed routing.

2 ( ) ( ) Prepare one end of a cord as shown in Part A.

3 ( ) ( ) Install a connector on each lead at this end of the cord as shown in Part B and Part C.

4 ( ) ( ) Prepare the other end of the cord as shown in Part D.

5 ( ) ( ) Install a spade lug on each cord lead as shown in Part E and Part F.



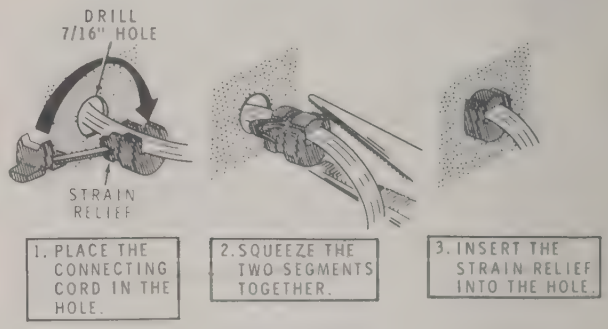
PICTORIAL 12

NOTES:

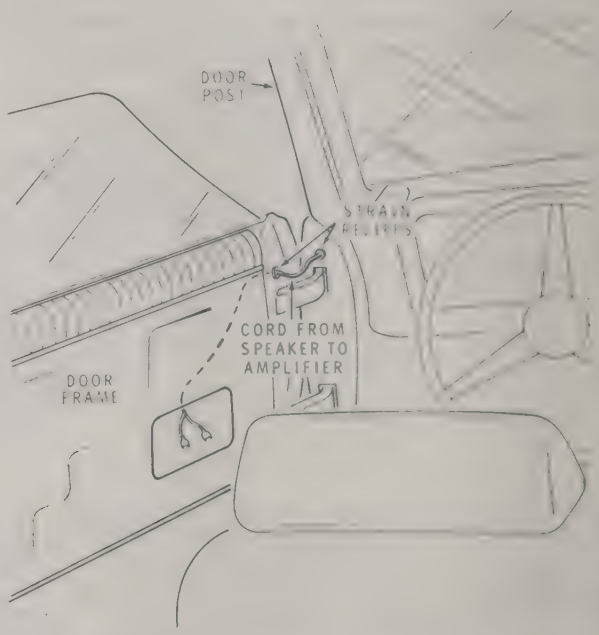
1. You may route the connecting cord to the power amplifier by routing it through the door and the door post as shown in Pictorial 13. Examine the door, and body near the door, for routing the cords. The routing shown on this Pictorial requires sufficient clearance for the strain reliefs and the cord when the door is closed.

2. After you drill any holes in the door or the car body for the connecting cords, install strain reliefs in the holes as shown in Detail 13A. Locate the holes in the door post so you do not damage any existing wiring near the door post.

3. Inspect the car under the dash for places to tie the connecting cords to when you route the cords from the door post to the power amplifier.


DRILL 7/16" HOLE
STRAIN RELIEF
1. PLACE THE CONNECTING CORD IN THE HOLE.
2. SQUEEZE THE TWO SEGMENTS TOGETHER.
3. INSERT THE STRAIN RELIEF INTO THE HOLE.

Detail 13A



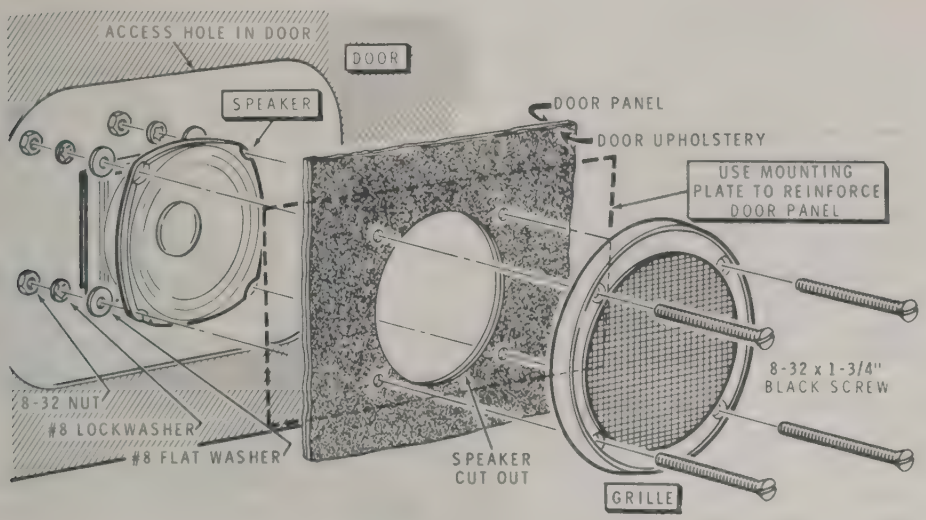
1 ( ) ( ) If you decide to route the connecting cord through the front of the door, drill 7/16" diameter holes in the door and the door post.

2 ( ) ( ) Position the speaker end of the cord in the door so it will easily reach the Speaker lugs.

3 ( ) ( ) Install strain reliefs as shown in Detail 13A.

4 ( ) ( ) Tie the connecting cord to the auto under the dash.

PICTORIAL 13



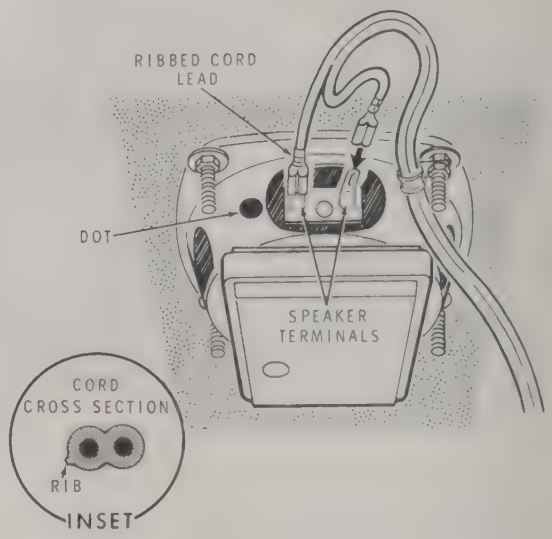
NOTE: In the following step, if the access hole in the door is larger than the mounting plate, also install the mounting plate, as shown, to reinforce the door panel.

1 ( ) ( ) Place the grille on the outside of the upholstery and the Speaker on the inside of the door panel over the speaker cutout. Position the Speaker so the speaker lugs are accessible. Then install four 8-32 x 1-3/4" black screws through the speaker grille, the upholstery, the door panel, and the Speaker. Place a #8 flat washer, a #8 lockwasher, and an 8-32 nut on each black screw. Tighten the nuts evenly. Do not overtighten the nuts or the speaker grille may be damaged.

PICTORIAL 14

1 ( ) ( ) Connect the speaker cord connectors to the speaker terminals. Be sure the ribbed cord lead is connected to the terminal identified by the dot. Refer to the inset drawing to identify the ribbed cord lead.

2 ( ) ( ) Position the connecting cord through a cable clamp and secure the clamp to a speaker mounting screw with a #8 flat washer, a #8 lockwasher, and an 8-32 nut.

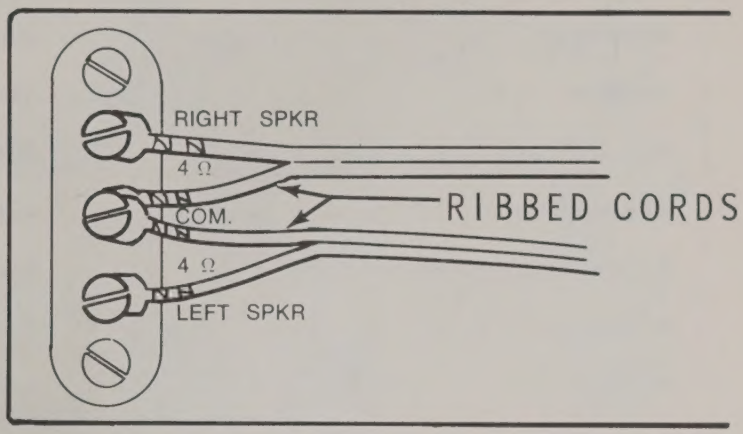


PICTORIAL 15

1 ( ) Connect each ribbed cord lead to the COM terminal of the power amplifier as shown.

2 ( ) Connect the other cord lead from the right speaker to the RIGHT SPKR terminal as shown.

3 ( ) Connect the other cord lead from the left speaker to the LEFT SPKR terminal as shown.



PICTORIAL 16

Checking the Speakers

NOTE: If the Speakers do not operate properly in the following step, proceed to "In Case of Difficulty."

( ) Operate the Stereo Cassette and/or the FM Tuner at various volume levels to check the Speakers, the cords, and the connectors at the power amplifier and the Speakers.

( ) ( ) Replace the door panels and the upholstery, with speakers, in the doors permanently. Also, replace the door handles and all door trim.

( ) Carefully peel away the backing paper from the blue and white identification label. Press the label on your Manual cover for an easy reference. Be sure to refer to the numbers on this label in any communications you have with the Heath Company about this kit.

This completes the "Speaker Installation" in the doors of your car.

In Case of Difficulty

1. Check the connectors on the Speakers and the power amplifier. Be sure the speaker connectors are attached securely to the speaker lugs and that the power amplifier screws are tightened on the spade lugs.

2. Check for a broken cord lead at the ends of the connector cords. Also check the solder connections at all the connectors.

3. Check for a "short" between the speaker lugs, or between the cords and any metal part of the car. Also, check for a "short" between the two leads of a connecting cord at the Speakers or at the amplifier.

SPECIFICATIONS

Speaker Size	4-1/2" diameter.
Magnet Weight	9.8 oz.
Impedance	4 Ω.
Maximum Power	10 watts.
Frequency Response	60 Hz – 15 kHz.
Mounting Space Required	4-9/16" wide x 4-9/16" high x 2-3/8" deep.
Speaker Type	Full range, compact.
Net Weight	6-1/2 lbs.

The Heath Company reserves the right to discontinue products and to change specifications at any time without incurring any obligation to incorporate new features in products previously sold.

FACTORY REPAIR SERVICE

You can return your completed kit to the Heath Company Service Department to have it repaired for a minimum service fee. (Kits that have been modified will not be accepted for repair.) Or, if you wish, you can deliver your kit to a nearby Heathkit Electronic Center. These centers are listed in your Heathkit catalog.

To be eligible for replacement parts under the terms of the warranty, equipment returned for factory repair service, or delivered to a Heathkit Electronic Center, must be accompanied by the invoice or the sales slip, or a copy of either. If you send the original invoice or sales slip, it will be returned to you.

If it is not convenient to deliver your kit to a Heathkit Electronic Center, please ship it to the factory at Benton Harbor, Michigan and observe the following shipping instructions:

Prepare a letter in duplicate, containing the following information:

- Your name and return address.
- Date of purchase.
- A brief description of the difficulty.
- The invoice or sales slip, or a copy of either.
- Your authorization to ship the repaired unit back to you C.O.D. for the service and shipping charges, plus the cost of parts not covered by the warranty.

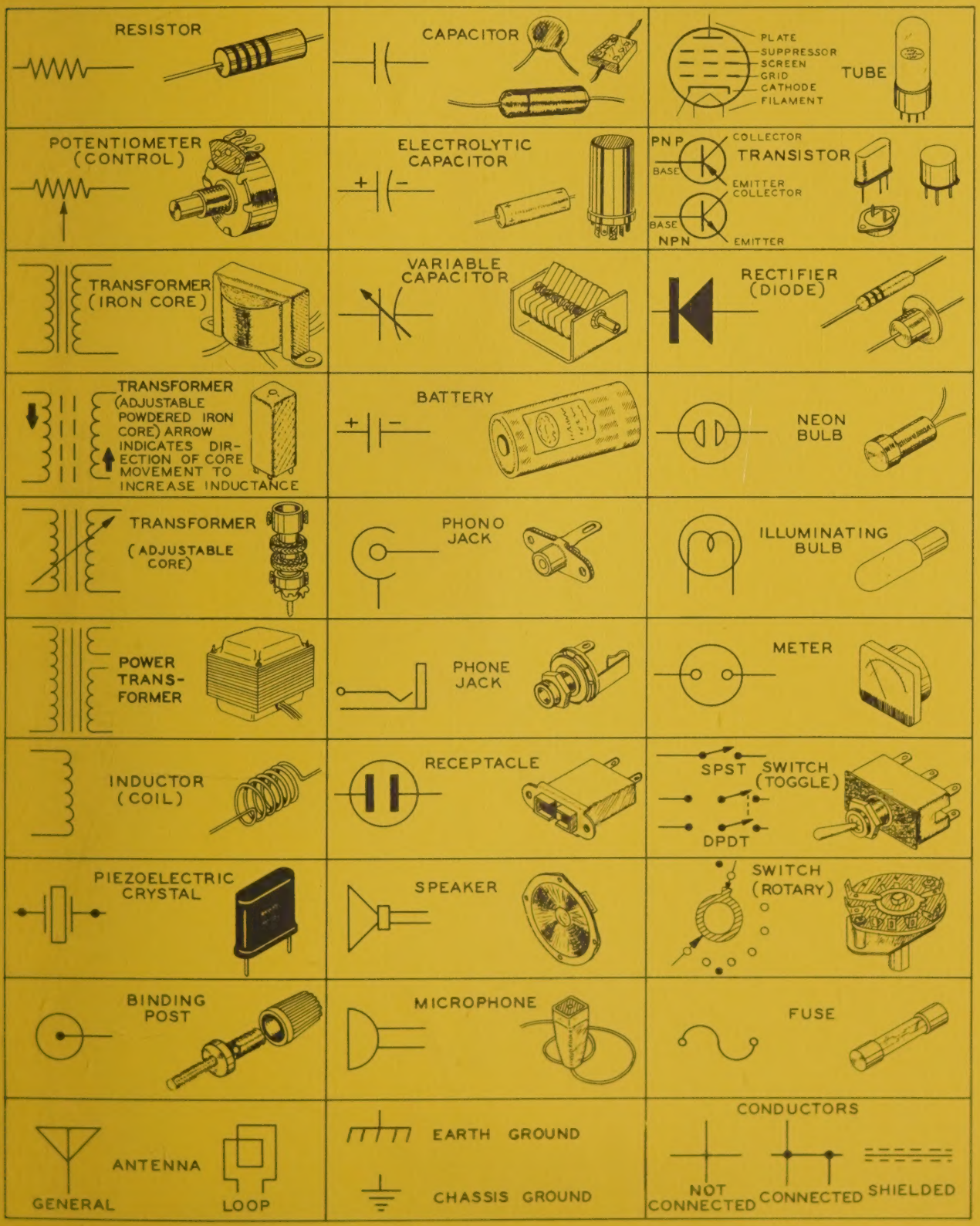
Attach the envelope containing one copy of this letter directly to the unit before packaging, so that we do not overlook this important information. Send the second copy of the letter by separate mail to Heath Company, Attention: Service Department, Benton Harbor, Michigan 49022.

Check the equipment to see that all parts and screws are in place. Then, wrap the equipment in heavy paper. Place the equipment in a strong carton, and put at least THREE INCHES of resilient packing material (shredded paper, excelsior, etc.) on all sides, between the equipment and the carton. Seal the carton with gummed paper tape, and tie it with a strong cord. Ship it by prepaid express, United Parcel Service, or insured parcel post to:

Heath Company
Service Department
Benton Harbor, Michigan 49022

TYPICAL COMPONENT TYPES

This chart is a guide to commonly used types of electronic components. The symbols and related illustrations should prove helpful in identifying most parts and reading the schematic diagrams.



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